erator laboratory

EXP-64
August 5, 1974

ACCELERATOR EXPERIMENT: Shottky Scan in the Booster with Debuncher

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The Booster was run D.C. The RF was turned off except for Shottky scan.

The Linac was operating at the high-intensity mode.

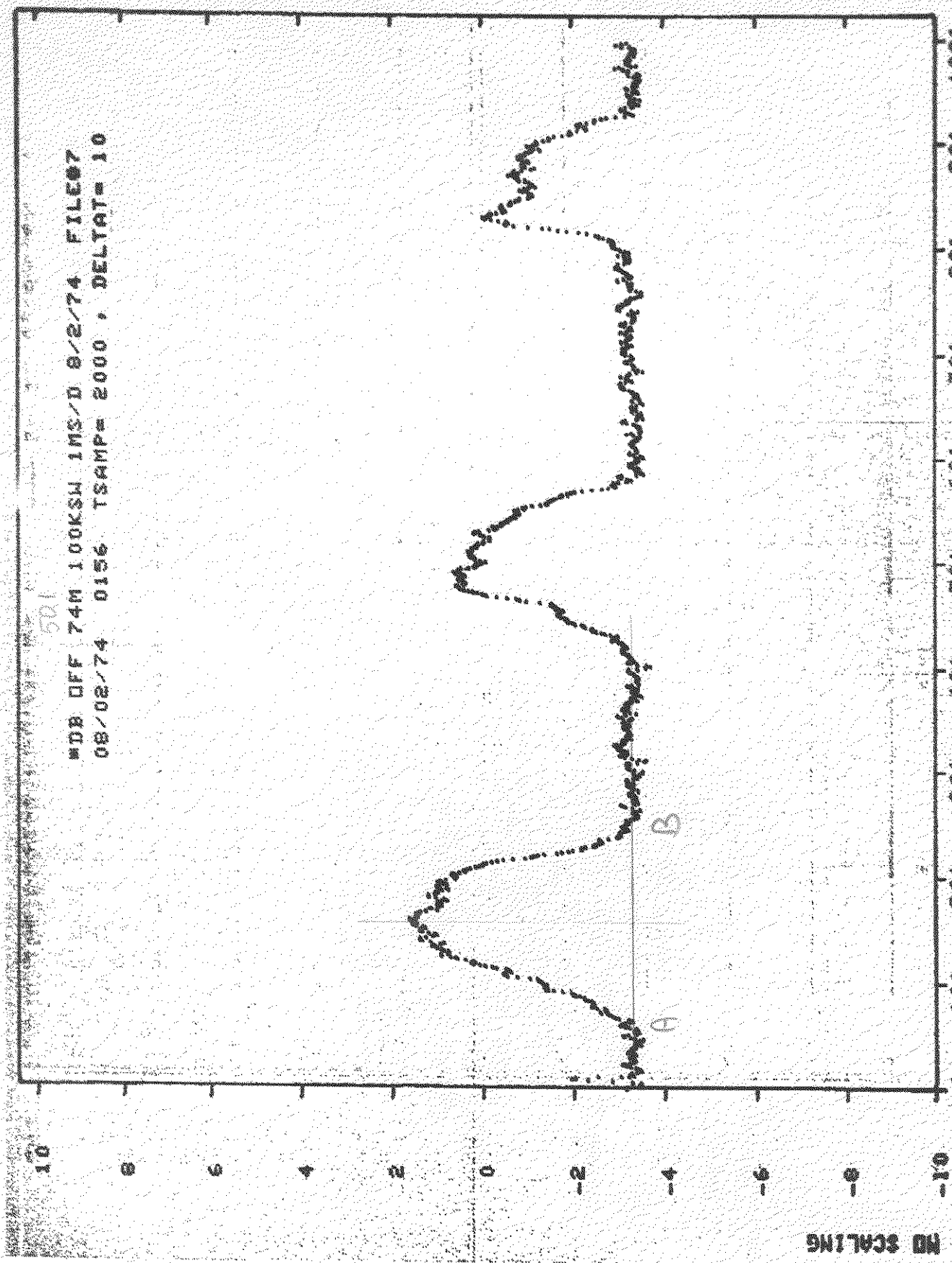
Two shottky scans were taken (Figs. 1 and 2) with debuncher off (Fig. 1) and on (Fig. 2). Each scan took about 10 msec, during which time there were appreciable beam losses. The scans shown in Fig. 1 and 2 are the overposition of 50 pulses.

The parameters are:

Central Frequency		74 MHz at mark 501
Frequency range		0.1 MHz per major division, 1 MHz across each scan
Resolution		10 kHz
Harmonic Number		206
Frequency Spread	(off) 0.2 MHz	(on) 0.14 MHz
Revolution Frequency Spread, Δf	(off) 0.97 kHz	(on) 0.68 kHz
Energy (kinetic)		200 MeV
Revolution Frequency, f		0.358 MHz
$\eta = \gamma^{-2} - \gamma_T^{-2}$		0.64
Momentum spread, $\Delta p/p = \Delta f/\eta f$	(off) 4.2×10^{-3}	(on) 3.0×10^{-3}
Momentum Spread Reduction		~ 30%

The spreads have been measured and calculated with reference to the first pick (at the left) in Figs. 1 and 2, from point A to point B.

A.G. Ruggiero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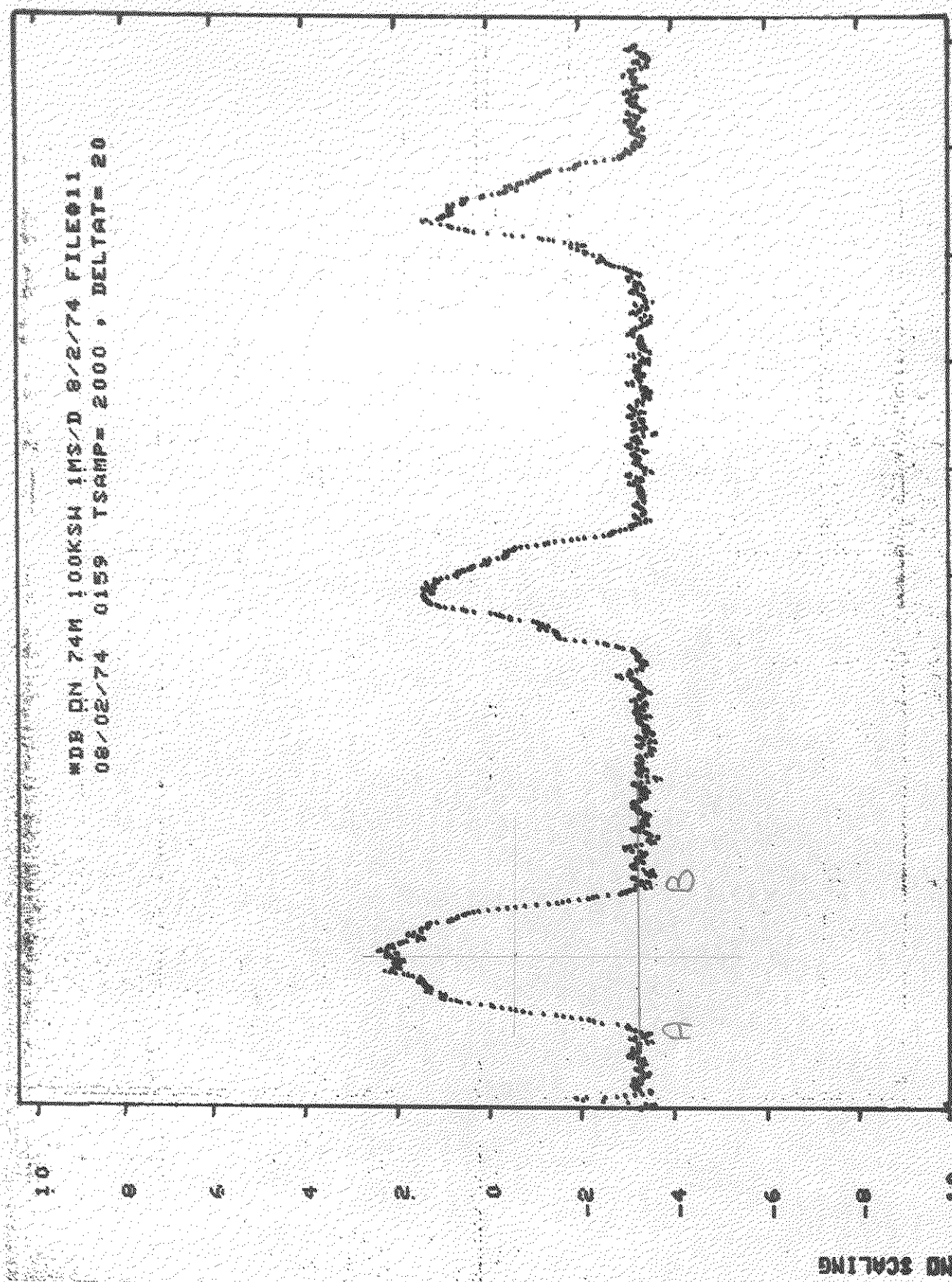
10
8
6
4
2
0
-2
-4
-6
-8
-10
1
101
201
301
401
501
601
701
801
901
1001

Figure 1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MD SCALING
10
8
6
4
2
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-2
-4
-6
-8
-10
1
101
201
301
401
501
601
701
801
901
1001
A
B

Figure 2